STIHL®

Harvester Chain Manual

2015-01

Introduction

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1. The Right Choice – STIHL Harvester Saw Chain

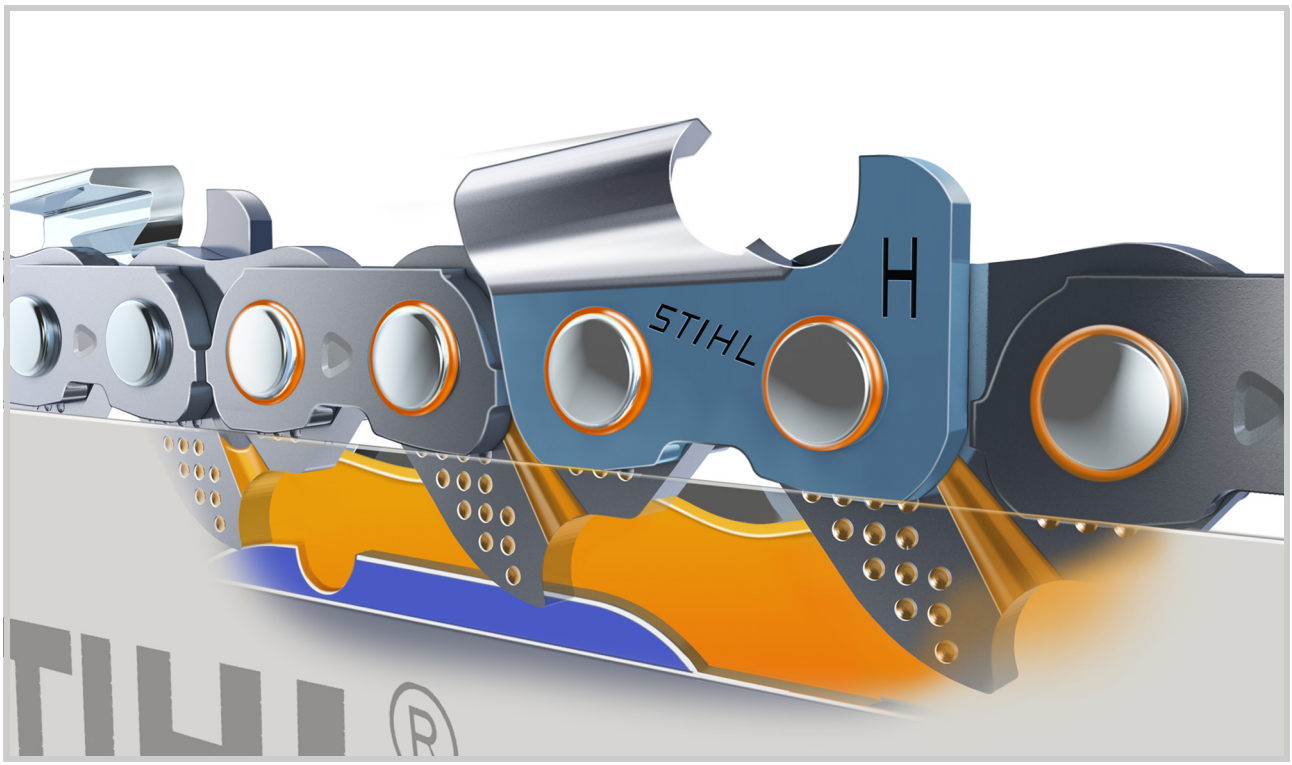
STIHL harvester chains are precision made in STIHL's Switzerland based factories. These chains are produced on special machinery custom designed and built by STIHL. STIHL has determined the ideal material mix for every component of the chain. Meticulous production processes and strict quality controls combined with proper chain maintenance ensure less friction for smooth operation and a long wear life.

This STIHL Harvester Chain Manual was created for and is provided to STIHL Dealers and owners/operators of harvester equipment utilizing STIHL chain in the cutting attachment. This manual provides information, that when followed, results in a properly sharpened and well maintained harvester chain. Good cutting performance, positively contributes to the service life of the cutting attachment. However, the design and power of the drive unit, the quality/condition of the harvester guide bar along with working technique are also factors impacting harvester performance.

STIHL OILOMATIC® System of Chain Lubrication

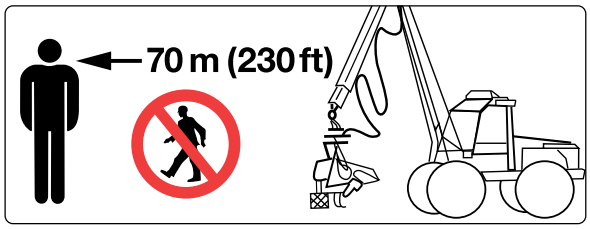
Chain lubrication has a decisive influence on the service life of a chain.

The patented OILOMATIC® principle of chain lubrication extends the useful life of the chain, guide bar and chain sprocket. Unlike conventional chains, each drive link of STIHL OILOMATIC® saw chain incorporates an oil channel which is angled upwards and backwards.



2. Safety Precautions and General Information

2.1 Safety Precautions for working with mechanical timber harvesting machines



Saw chain breakage and thrown parts of chain, called "chain shot" (chain shot is the term commonly used by manufacturers as well as forestry professionals to describe the parts of the chain that are thrown through the air when a chain breaks).

These harvester machines impose a very heavy load on the cutting attachment. For this reason it is necessary to observe the notes and instructions on reducing the risk of chain breakage and possible injury.

It is important you read and understand the instruction manual before using your machine for the first time and keep it in a safe place for future reference. Non-observance of the safety precautions may result in serious or even fatal injury.

Observe all applicable safety regulations, standards and ordinances.

The following information is intended to supplement the machine-specific instruction manual, but not replace it:

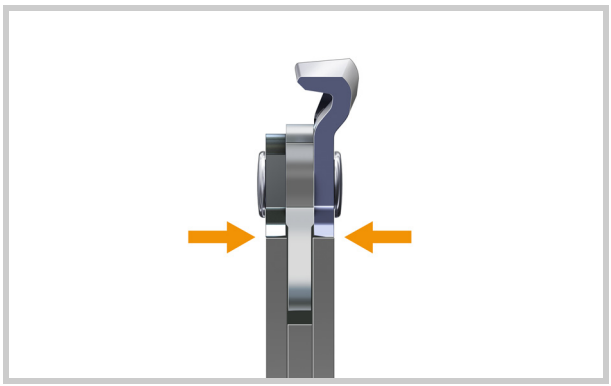
- Position the guide bar and chain so that parts are not thrown in the direction of the operator.
- The timber harvester's cab should be equipped with appropriate safety windows.
- A chain speed of 40 m/s (131.23 ft./sec.) must not be exceeded when using STIHL RAPID™ Micro™ Harvester saw chains (RMH, RMHS).
- The area around the chain sprocket must be fitted with a suitable guard.
- Make sure that bystanders keep a minimum distance of 70 m (230 ft.) from the harvester when it is in cutting operations.
- Inspect the chain regularly for damage – do not continue working with a damaged chain – replace a damaged chain or replace chipped cutters and other damaged parts of the chain.
- STIHL recommends the use of original STIHL replacement parts for repairs – do not install used parts. Repairing the chain with used or non-OEM parts could cause a premature failure resulting in severe injury or death and possible damage to the machine components.
- STIHL recommends that the complete saw chain must be replaced after it has broken twice.
- Always resharpen STIHL chains to factory specifications.
- Make sure the chain is always properly tensioned.
- Replace the chain sprocket as soon as it shows any visible signs of wear. A specific wear depth that can be measured to 0.6 mm (0.025 in.) indicates that the sprocket needs replacement. It is recommended that a sprocket should be replaced after the use of 10 chains.

- When the chain is running, no persons may stand at the same level as the guide bar.
- STIHL RAPID™ Micro™ Harvester chains are approved for use on timber harvesters only. They must not be used on handheld chain saws or for any other purpose.
- The components of the cutting attachment must match, i.e. chain pitch and drive link gauge.
- STIHL recommends that chain links, chain drivers and chain cutters be inspected for cracks and other damage before the chain is placed into use, before maintenance procedures such as sharpening or repair are initiated.
- STIHL recommends that machine operators check with a labor or industries representative (i.e. OSHA) and/or timber harvesting machine manufacturer in regards to required guarding and appropriate windshield thickness on harvesting machinery using chain.

2.2 General information

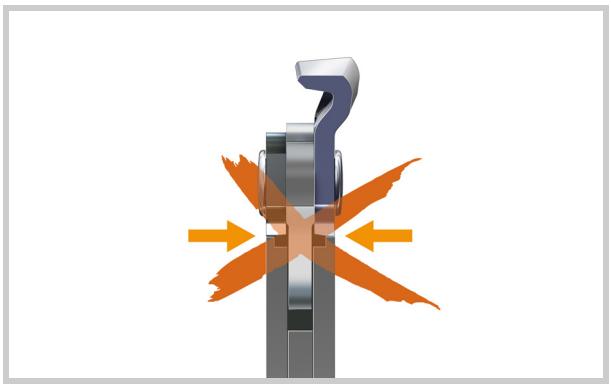
- The guide bar and chain must always be well lubricated at the proper oil flow rate. STIHL recommends the use of STIHL Bar & Chain Oil or a comparable quality bar and chain oil. In colder temperatures use a STIHL "Winter" Grade Bar & Chain oil or a comparable quality winter grade oil of another manufacturer. Never use hydraulic oils for lubrication of the chain and guide bar.
- Higher chain speeds result in increased wear which negatively impacts service life of the chain and bar and increases the potential for chain breakage and possible injury. Always monitor the factors that influence chain performance. Influencing performance factors such as feed force, chain speed, chain sharpness, sprocket condition and guide bar integrity. A chain speed of 40 m/s (131.23 ft./sec.) should not be exceeded when using STIHL Harvester Chain.

2.3 Before using for the first time – changeover from other saw chains to the STIHL RAPID™ Micro™ Harvester Special (RMHS)



The .404" RMHS chain has wide running faces to reduce the load on the chain, guide bar and sprocket.

In order to utilize the benefits of the chain's wide running faces and thus extend service life, it is necessary to check that the widths of the running faces on the chain, guide bar rails and chain sprocket match.



Narrower saw chains cause a narrower wear pattern on the guide bar and chain sprocket. If the new .404" RMHS chain is mounted on a bar worn in such a way, the edge pressure will be increased. This would result in excessive wear or damage on the new chain.

It is recommended that a new chain sprocket and a new guide bar be installed with the new chain to ensure optimum break-in and operation.

Instead of a new guide bar, the rails of a used guide bar can be deburred.

3. STIHL Harvester Saw Chain

A harvester chain is subjected to extremely high loads during operation. The individual parts of the chain are exposed to constantly alternating tensile forces which can result in cracks and finally cause the chain to break.

The STIHL RAPID™ Micro™ Harvester (RMH) and STIHL RAPID™ Micro™ Harvester Special (RMHS) have been specifically developed to withstand the continuous high loads imposed in highly mechanized timber harvesting operations. All parts of the chain have been strengthened to greatly minimize the risk of cracks, while maintaining the same high cutting capacity.

STIHL harvester chains are designed for professional applications under the toughest of operating conditions. STIHL harvester chains are available in two versions: STIHL RAPID™ Micro™ Harvester (RMH) and STIHL RAPID™ Micro™ Harvester Special (RMHS).

STIHL RAPID™ Micro™ Harvester (RMH)

Cutters

Semi-chisel chain with slim, straight-sided cutter. The narrow cutter shape reduces cutting resistance. Depth gauge setting is 1.5 mm (0.059 in.).

Tie straps and drive links

The reinforced tie straps, drive links and rivets are rated to take account of the high driving power of harvesters and the resultant high loads imposed on the chain. Reduced distance between tie straps increases flexural strength and reduces the risk of chain breakage.

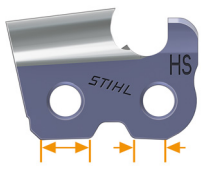
Identification

Each cutter is marked with "H" just below the depth gauge.

STIHL RAPID™ Micro™ Harvester Special (RMHS)

Cutters

Semi-chisel chain with slim, straight-sided cutter. The offset depth gauge makes this a smooth running chain. As a result, the risk of chain breakage is greatly reduced and service life is extended. Depth gauge setting is 1.0 mm (0.039 in.).

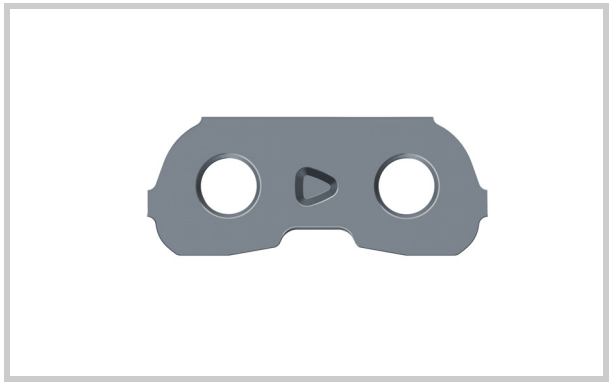


Sliding surface has been increased by patented, asymmetric shape of toe and heel. This results in considerably reduced pressure on the cutters for a longer wear life.

Identification

Each cutter is marked with "HS" just below the depth gauge.

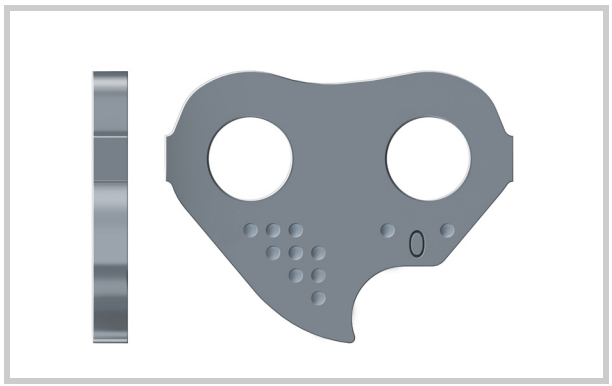
Tie straps



40 RMH:
Symmetrically shaped running faces. The tie straps are non-directional.

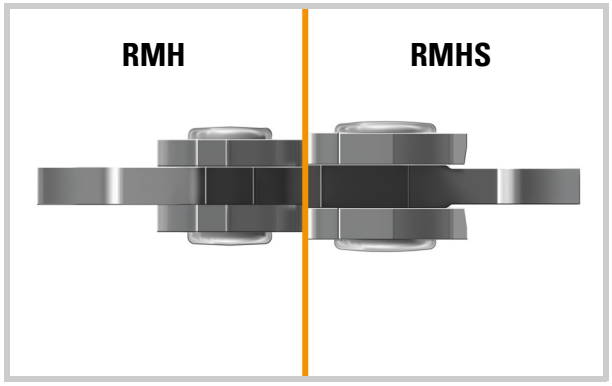
40 RMHS:
Wear surface is increased by asymmetrically shaped running faces. This greatly reduces the pressure on the tie straps and prolongs the service life of the chain. Owing to the different sizes of the running faces, the tie straps are directional, i.e. there are left-hand and right-hand tie straps.

Drive links



The drive links are reinforced in the area of the rivet holes. The part of the drive link that runs in the bar groove, the tang, is stepped – 2.0 mm (0.080 in.) drive link gauge.

Reduced stress



All heavily stressed parts of the STIHL RMHS have been specially strengthened. This means that the forces acting on the drive links, tie straps, cutters and rivets can be better spread over the whole chain. The strengthened STIHL RAPID™ Micro™ Harvester Special (RMHS) therefore has an up to 70 % longer service life than conventional harvester chains with a 2.0 mm (0.080 in.) drive link gauge.

3. STIHL Harvester Saw Chain

3.1 Specifications

Saw Chain	Rapid Harvester Micro	Rapid Harvester Special
Marketing number	40 RMH (Type 3996)	40 RMHS (Type 3620)
Chain pitch	.404"	.404"
Drive link gauge	2.0 mm (0.080 in.)	2.0 mm (0.080 in.)
Depth gauge setting	1.5 mm (0.059 in.)	1.0 mm (0.039 in.)
Chain speed	40 m/s (131.23 ft./sec.)	40 m/s (131.23 ft./sec.)
Driving power (harvester head)	40 kW (54,38 bhp)	65 kW (87,17 bhp)
Sharpening angle	30°	30°
Side plate angle	75°	75°
Identification	"H" stamped in area of depth gauge	"HS" stamped in area of depth gauge

3.2 Technical Data

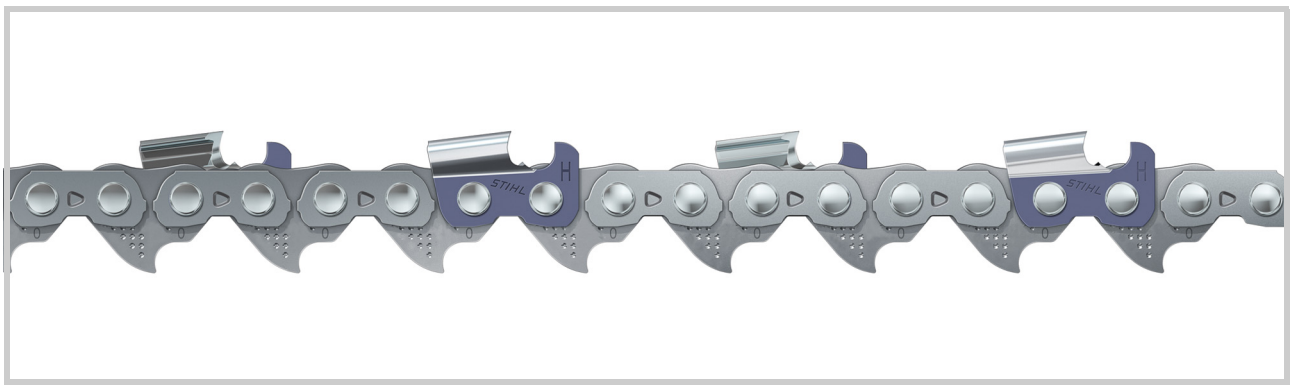
Physical properties

	Rapid Harvester Micro (40 RMH)	Rapid Harvester Special (40 RMHS)
Tensile strength	12000 N	15000 N
Kerf	8.9 mm (0.350 in.)	10.1 mm (0.398 in.)

Operating properties

	Rapid Harvester Micro (40 RMH)	Rapid Harvester Special (40 RMHS)
Guide bar oil flow rate		
min.	900 cm³/h (54.2 cu. in./hr.)	1200 cm³/h (73.2 cu. in./hr.)
max.	1800 cm³/h (109.8 cu. in./hr.)	2400 cm³/h (146.5 cu. in./hr.)
Power		
min.	10 kW (13.4 bhp)	20 kW (26.8 bhp)
max.	45 kW (60.4 bhp)	65 kW (87.2 bhp)
Guide bar feed load at center		
min.	100 N	250 N
max.	700 N	1000 N
recommended	600 N	900 N
Saw chain speed		
min.	20 m/s (66 ft./sec.)	20 m/s (66 ft./sec.)
max.	40 m/s (131 ft./sec.)	50 m/s (164 ft./sec.)
recommended	40 m/s (131 ft./sec.)	40 m/s (131 ft./sec.)

3.3 Saw Chain Reels



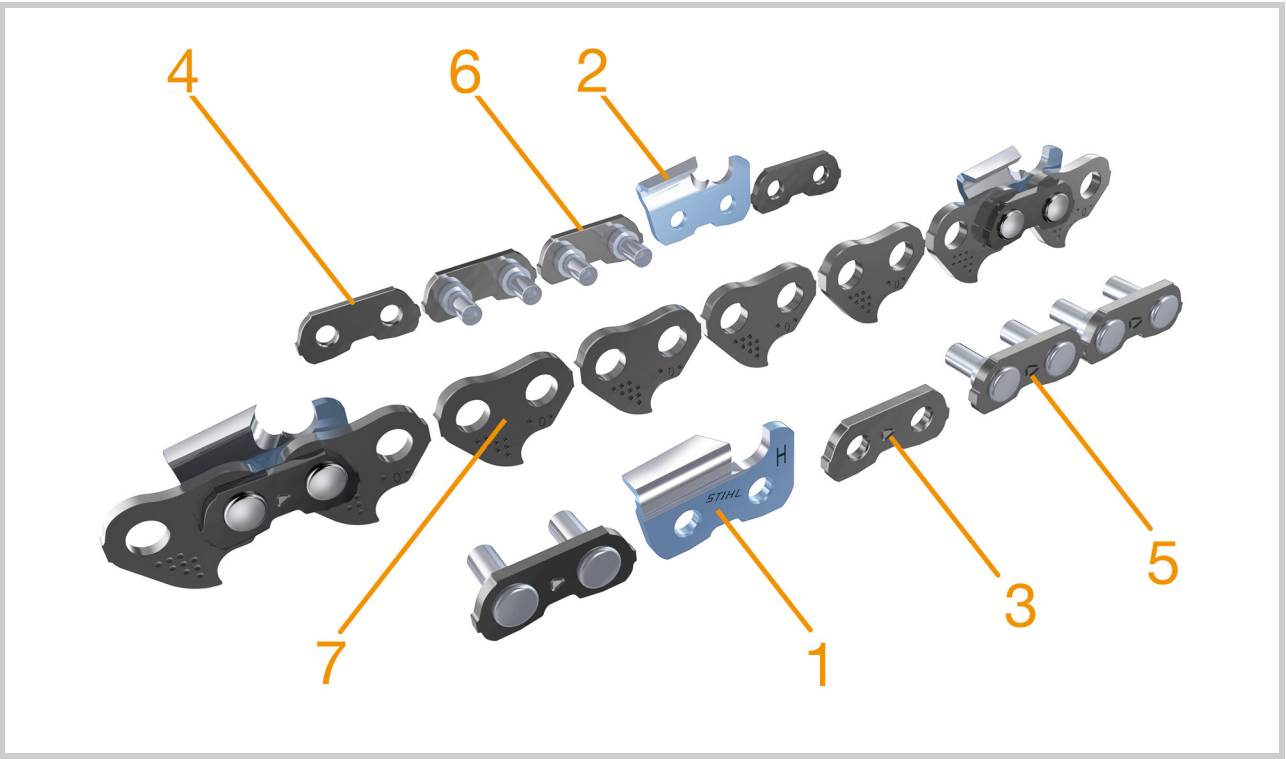
40 STIHL RAPID™ Micro™ Harvester (Type 3996)

Saw chain	Lenght	No. of drive links	Drive link gauge	Part No.
40 RMH	7.6 m (25 ft.)	370	2.0 mm (0.080 in.)	3996 000 0370
40 RMH	15.2 m (50 ft.)	740	2.0 mm (0.080 in.)	3996 000 0740
40 RMH	30.4 m (100 ft.)	1480	2.0 mm (0.080 in.)	3996 000 1480

40 STIHL RAPID™ Micro™ Harvester Special (Type 3620)

Saw chain	Lenght	No. of drive links	Drive link gauge	Part No.
40 RMHS	7.6 m (25 ft.)	370	2.0 mm (0.080 in.)	3620 000 0370
40 RMHS	15.2 m (50 ft.)	740	2.0 mm (0.080 in.)	3620 000 0740

4. Spare Parts



40 STIHL RAPID™ Micro™ Harvester (Type 3996)

Part No.	Description	Consisting of	Item
3996 007 1000	Right hand cutter kit	5x right hand cutter 5x left hand preset tie strap	1 6
3996 007 1001	Left hand cutter kit	5x left hand cutter 5x right hand preset tie strap	2 5
3996 660 6020	Tie strap kit	12x tie strap (without rivet) 12x preset tie strap	3 6
3996 662 1050	Drive link kit	10x drive link	7

40 STIHL RAPID™ Micro™ Harvester Special (Type 3620)

Part No.	Description	Consisting of	Item
3620 007 1000	Right hand cutter kit	5x right hand cutter 5x left hand preset tie strap	1 6
3620 007 1001	Left hand cutter kit	5x left hand cutter 5x right hand preset tie strap	2 5
3620 660 6000	Tie strap kit	12x tie strap (without rivet) 12x preset tie strap	3 6
3620 662 1050	Drive link kit	10x drive link	7

Notes

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